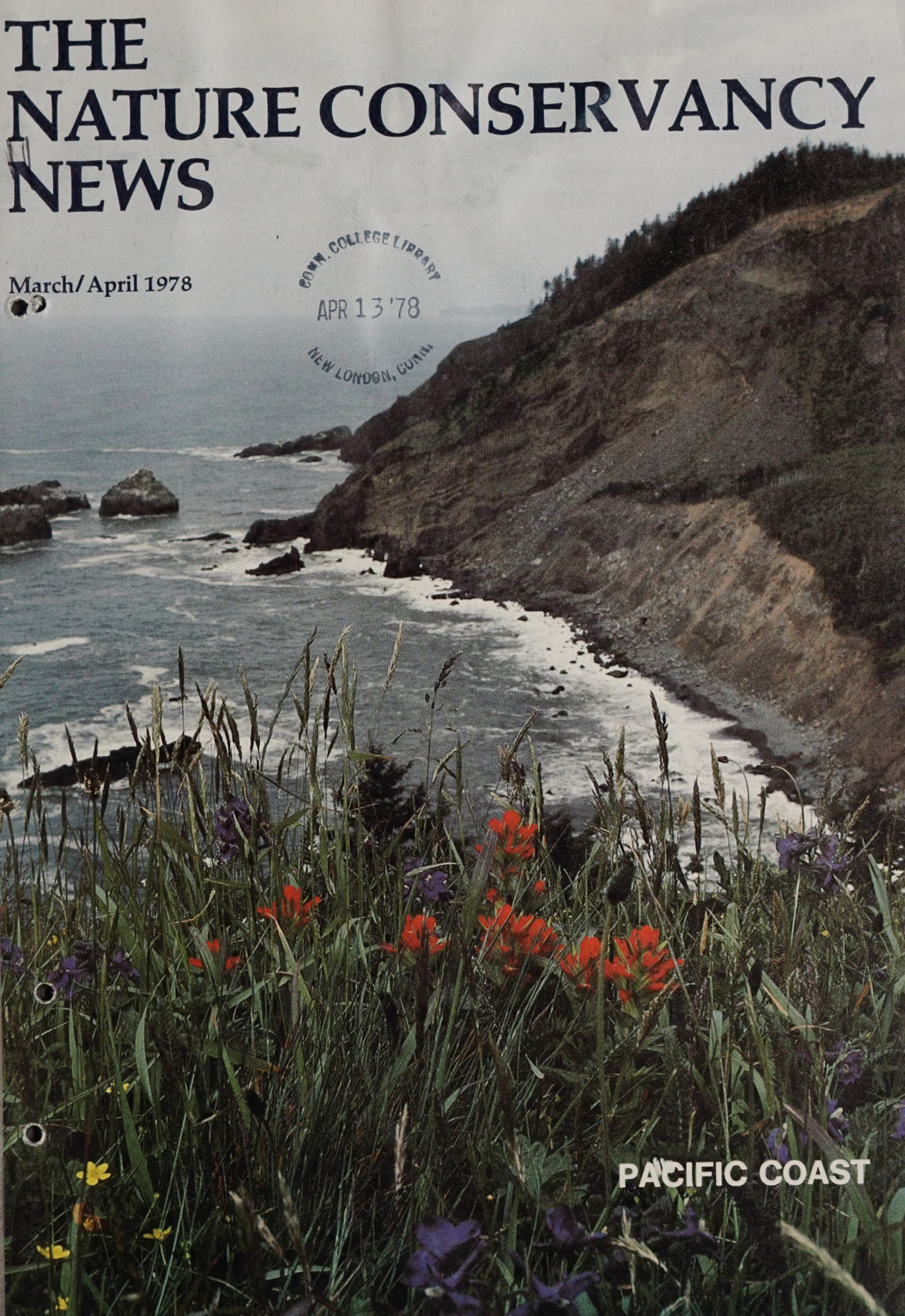
THE NATURE CONSERVANCY NEWS

March/April 1978

CONN. COLLEGE LIBRARY
APR 13 '78
NEW LONDON, CONN.



PACIFIC COAST

Make a Better Future Your Legacy.

When you include The Nature Conservancy in your will, you help to insure that America's natural heritage will be preserved for future generations.

Just as you support the Conservancy today, your bequest will continue to support programs of natural area preservation. No matter how modest, a gift of money or property will become a lasting memorial to your name. And, because such gifts are tax deductible, a greater proportion of your estate will go to the people and causes you care about.

For more information about how to include The Nature Conservancy in your will, return the coupon below. If you wish to make a specific bequest, the Conservancy will be glad to consult with you on a confidential basis.

Let a bequest of your land or money become a lasting symbol of your generosity and concern for the natural world.

☐ I wish to make a bequest to The Nature Conservancy. Please contact me.

☐ Please send me information about bequests.

Name_____

Address_____

City_____ State_____ Zip_____

Mail to: Mark N. Beach, Director of Development
The Nature Conservancy
1800 North Kent Street
Arlington, VA 22209

THE NATURE CONSERVANCY NEWS

VOLUME 28, NUMBER 2
MARCH/APRIL, 1978

BOARD OF GOVERNORS

OFFICERS
CHAIRMAN OF THE BOARD
John E. Andrus III, *Minnesota*
VICE CHAIRMEN
Frank D. Boren, *California*
Thomas L. McCall, *Oregon*
Nathaniel P. Reed, *Florida*
SECRETARY
Robert B. Anderson, *New Mexico*
TREASURER
Charles C. Haffner III, *Illinois*

John D. Archbold, *District of Columbia*
F. E. Balderston, *California*
Robert Bennett, *District of Columbia*
Helen Black, *Ohio*
William D. Blair, Jr., *Maryland*
Robert O. Blake, *District of Columbia*
Alexander Calder, Jr., *New Jersey*
Wallace C. Dayton, *Minnesota*
G. William DeSousa, *Connecticut*
William K. duPont, *Delaware*
John H. Filer, *Connecticut*
Richard H. Goodwin, *Connecticut*
R. Philip Hanes, Jr., *North Carolina*
Charles Hedlund, *New Jersey*
Kenneth E. Hill, *California*
Roy E. Larsen, *New York*
Dan W. Lufkin, *Connecticut*
Lyle M. Nelson, *California*
M. Graham Netting, *Pennsylvania*
John B. Oakes, *New York*
Eugene P. Odum, *Georgia*
Ruth Patrick, *Pennsylvania*
A. Timon Primm III, *Missouri*
Mrs. David Rockefeller, *New York*
Francis W. Sargent, *Massachusetts*
Stephen H. Spurr, *Texas*
Hubert W. Vogelmann, *Vermont*
Richard S. Weinstein, *Florida*
Mason Walsh, Jr., *Pennsylvania*
Mrs. Charles P. Yarn, Jr., *Georgia*

PRESIDENT
Patrick F. Noonan

THE NATURE CONSERVANCY NEWS
is published bimonthly by The Nature Conservancy, 1800 North Kent Street, Arlington, Virginia 22209.

EDITORIAL STAFF:
Sue E. Dodge, *EDITOR*
Anne M. Byers, *Senior Editor/Writer*
Susan Bournique, *Photo Editor*

Copyright 1978
The Nature Conservancy

Island in the Sea 4
Dave Bohn

Fair Winds from Spindrift Point 9
Annette Boushey and Eleanor Borden

Big Creek: Landscape of High Drama 13
Stephanie Mills, with Henry Little

Map: Pacific Coast Projects of The Nature Conservancy 16

Cascade Head 18
Robert Michael Pyle

Point of Arches 20
Ruth Kirk

Cox Island 22
Eveleen Henry

Elkhorn Slough 23

Lanphere-Christensen Dunes 24

Ecology Forum: The Importance of Thinking Small 25
Robert Michael Pyle

For the Birds 27
Lynn Mohn

New Projects 28

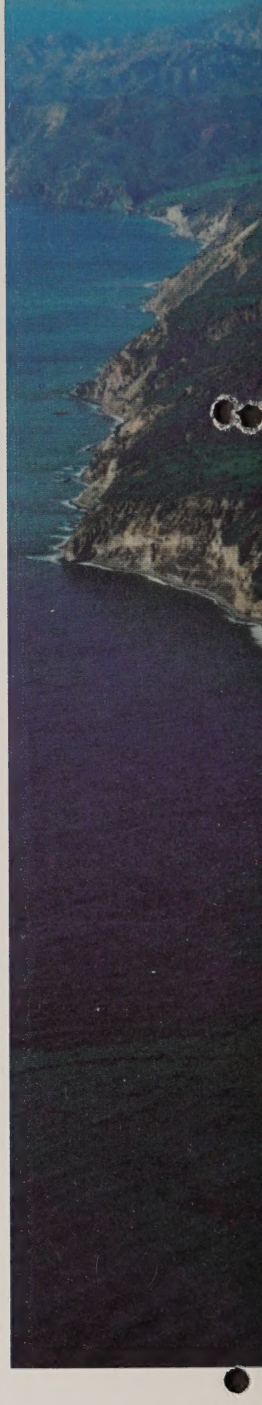
COVER: Wildflowers and rocky shore at Cascade Head, Oregon. Photo by Ray Culter.

The Nature Conservancy is a national conservation organization committed to the preservation of natural diversity by protecting lands containing the best examples of all components of our natural world.

To date the Conservancy and its members have been responsible for the preservation of 1,234,512 acres of forests, marshes, prairies, mountains, and islands: home to rare and endangered species of wildlife and plants. 1927 projects have been completed since the acquisition of the first preserve in 1954. Approximately 60% of all preserves are retained by the Conservancy and managed by volunteer land stewards.

A membership, non-profit organization, the Conservancy was incorporated in 1951 in the District of Columbia for scientific and educational purposes.

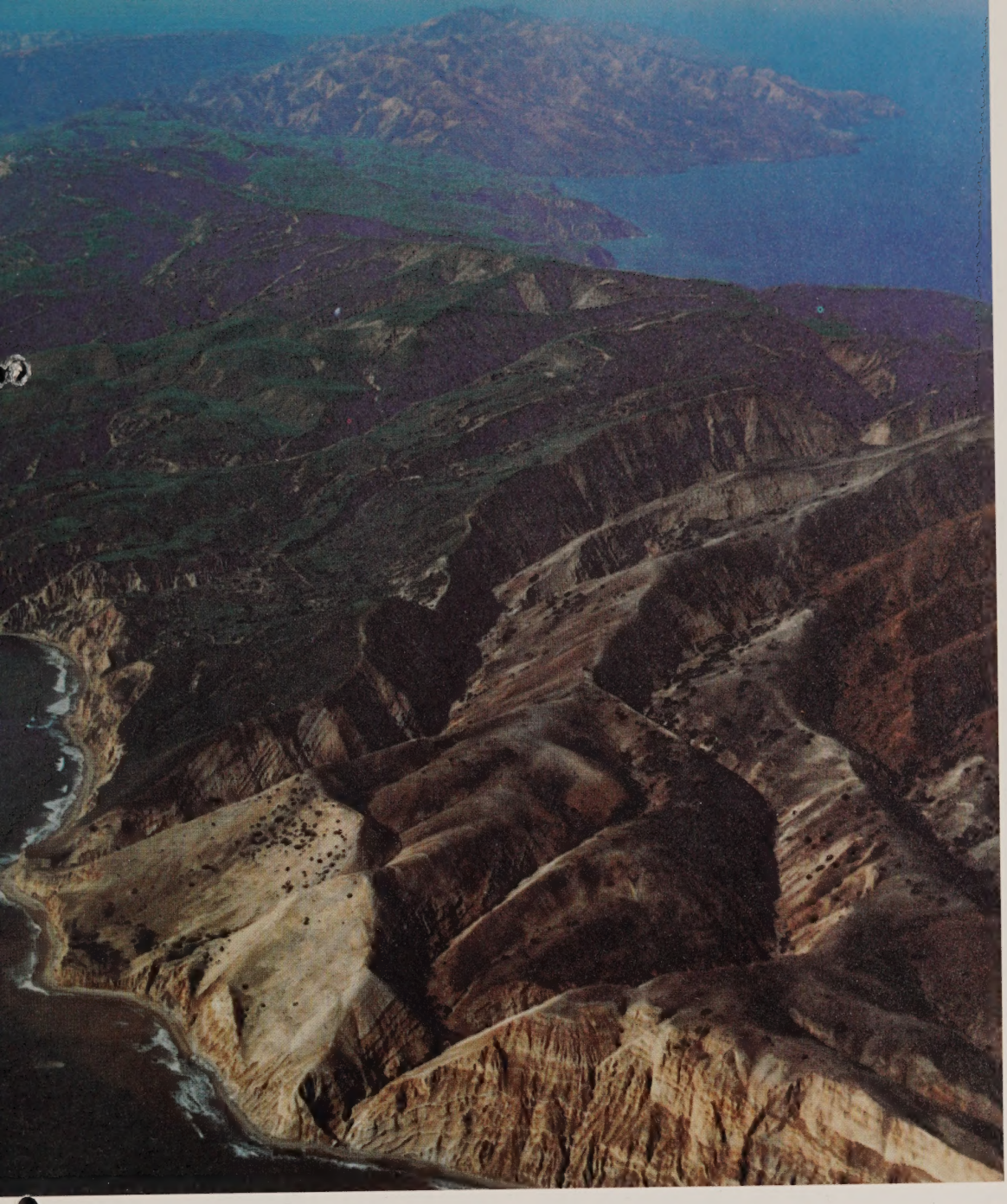
Island in the Sea



by Dave Bohn

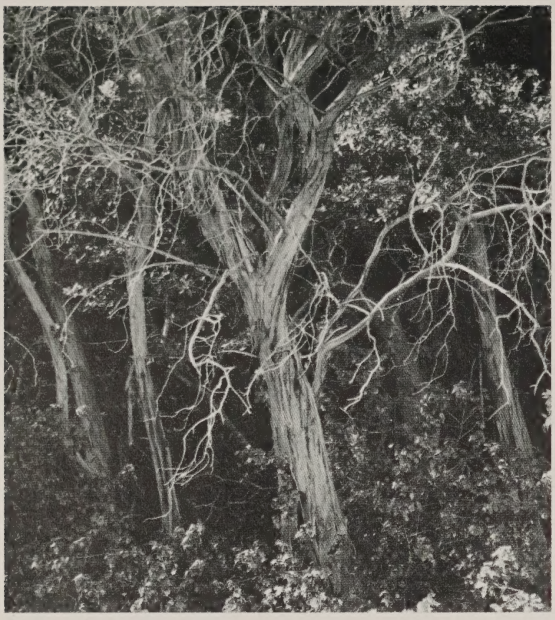
On December 2, 1977, I landed at Prisoners' Harbor on Santa Cruz Island and proceeded to the Santa Cruz Island Reserve, my domicile for six preliminary days of photography and general discussion. Though I cannot begin to really describe the Island, I was out there long enough to understand something of the remarkable partnership now commencing between The Santa Cruz Island Company and The Nature Conservancy, as initiated by the principal stockholder of the Company, Carey Stanton.

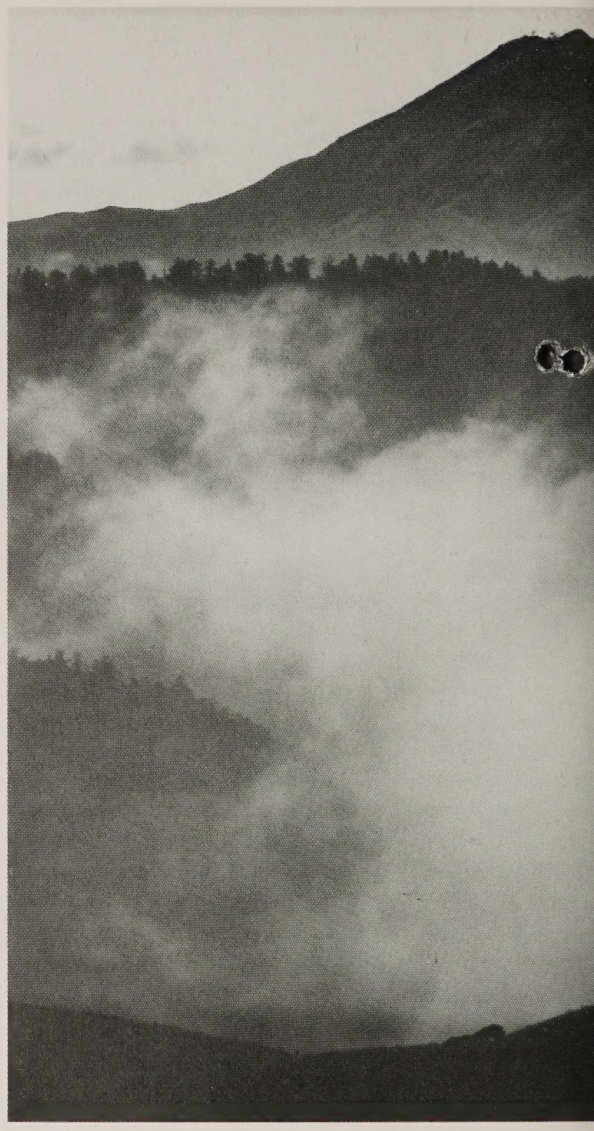
On the last of those six days I rode for hours in the Jeep with Henry Duffield, manager of the Santa Cruz Island Company Ranch. Fortunately Henry is a very patient man; there were numerous stops as I tried to put some of the big landscape onto film. In fact, the topography is so large and rugged that I had no sense whatever of the island universe. Hardly surprising, because *this* island is twenty-one miles long and six miles wide at most. The canyons are deep and the mountains rough. During much of the day Picacho Diablo (Devil's



Peak, at 2,434 feet) was in view, to disappear as we descended toward bottomland, to appear again as we climbed out on steep roads toward some ridgetop. And regarding those roads, I might say that not all of them are death-defying, as I had been led to believe, but nevertheless there were a fair number of stretches where I was mighty pleased to know Henry was in the driver's seat. Indeed, he has been roaming the Island by Jeep for quite a spell; eighteen years to be exact.

Since I am not a botanist I do not recognize flora by name, and tend to avoid checklists as the plague. But it is not necessary to be a botanist to observe the amazing diversity of growing things on Santa Cruz Island, and one of the outstanding aspects of traveling those abrupt and large topographic differences is recognition of habitat shift as defined by the trees. In this category even I know a few names because I have been attempting to photograph these inscrutable beasts for all of the years I have traveled in wilderness, so not a few of the stops were for this purpose. But I still find it





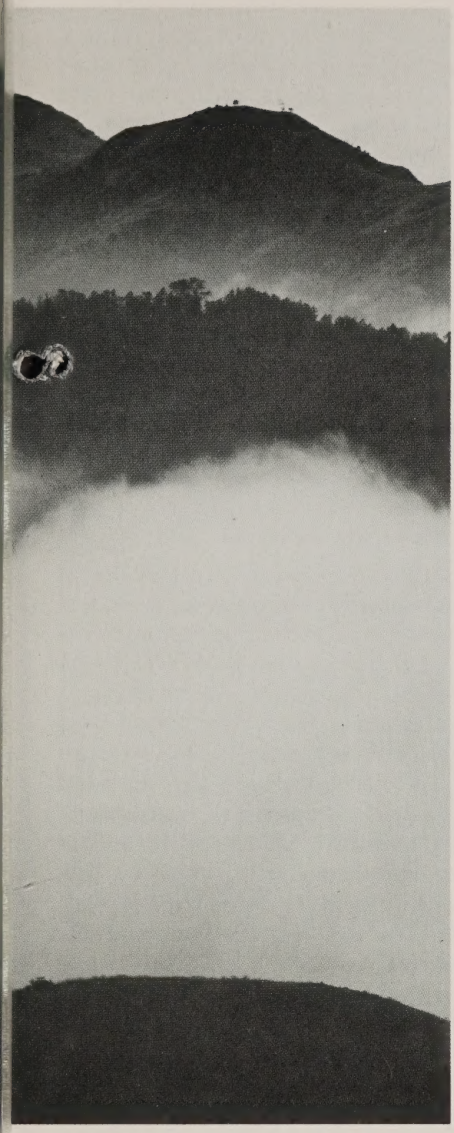
hard to believe that during those hours with Henry I saw island oak, coast-live oak, scrub oak, ironwood, willow, Santa Cruz Island Pine, and Monterey cypress. The ironwood and island oak are found only on the four largest Channel Islands.

We did not reach Christy Beach, near the western end of the Island, until 4:00 P.M., and Carey shortly thereafter telephoned the Christy Ranch house to find out why we were dawdling. In that respect, the major problem toward the end of the day was that a cloud bank moved away from the western shores about fifteen minutes before we got there, and the light at the beach was exquisite. And finally, the upper canyons and ridges of the northern range turned orange to red to an unbelievable mauve as Henry and I headed east, toward the big fireplace and dinner with Carey at the Stanton Ranch.

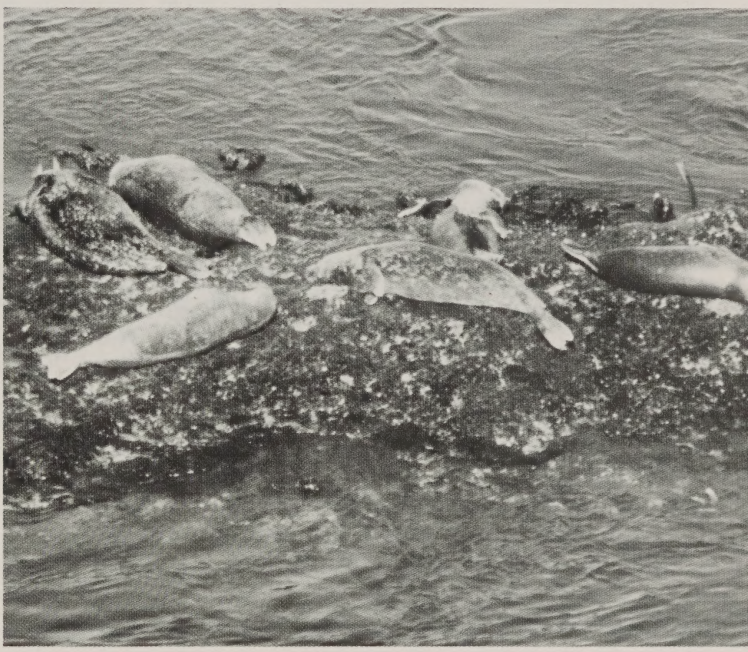
"Limuw"

The largest of the Channel Islands, Santa Cruz Island lies some twenty-three miles off the Santa Barbara coast and comprises about 62,000 acres or 96 square miles of canyons, valleys, beaches, and peaks. This superb landscape was "discovered" in 1542 by Juan Rodríguez Cabrillo, the first European to visit the Chumash Indians, and was named in 1769 by Juan Perez, another of the Spanish mariners.

The Island is an archaeologist's paradise with the probability of more than 3,000 sites, most of them in relatively undisturbed condition. Prehistoric oc-



Santa Cruz Island—55,000 acres of canyons, valleys, beaches, and mountains—is perhaps the most important private conservation acquisition in the west. Far left: ironwood (top) and Monterey cypress; left, Sierra Blanca; below, California sea lions frequent the ledges and surrounding waters.



cupancy is currently dated to at least ca. 5500 B.C. Further, estimates of population figures for the Chumash on the Island at the time of Cabrillo's contact range from 2,000 to 3,000, and the political "capital" (*Liyam*) for the four Northern Channel Islands—the Chumash "Island Province"—was situated not far from the present Ranch site. To the Chumash, the magnificent island was known as *Limuw,* meaning "in the sea."

The last of the Santa Cruz Island Chumash were removed to the mainland about 1813, and in 1839 the Island was granted to Andrés Castillero by the Governor of California, Juan Bautista Alvarado. Animal husbandry probably started in the early 1840's or 1850's, but at least by 1855 cattle, pigs, and sheep had been introduced, the latter by the 1930's numbering more than 100,000 with concomitant devastation of vegetation and topsoil on thousands of acres. The Island changed hands in 1857 when Castillero sold to William E. Barron, and in 1869 Barron sold to Justinian Caire and nine associates, who founded The Santa Cruz Island Company. By 1880, Caire had acquired all the stock in the Company, and subsequently established a colony of about one hundred French and Italian immigrants deep in the Island's great Central Valley. This unusual community eventually produced some of the finest of the early California wines—under the Santa Cruz Island Company label. Today, looking down on grassland near the old winery buildings, one can still see planting patterns though the vineyards are long gone.

The recent history of Santa Cruz Island began forty years ago when Edwin L. Stanton of Los Angeles purchased the western nine-tenths of the Island—just under 55,000 acres—while the eastern

tip remained in the hands of Justinian Caire descendants. Stanton moved the Company away from sheep to cattle raising, thus initiating a sheep removal program that became increasingly successful under Stanton's son, Carey Stanton, and Ranch manager Henry Duffield. The 100,000 sheep of the 1930's have now become 10,000 sheep (or perhaps even less than that) ranging on limited sections of the Stanton holdings, and those last 10,000 will eventually be eliminated. Meanwhile, as vegetation returns to large portions of the once-devastated landscape, Stanton and Duffield run what Stanton himself calls "a functioning 19th century cattle ranch."

Once a Peninsula

The four Northern Channel Islands once belonged to the mainland, as a peninsula extending westward from the Santa Monica Mountains. About 100,000 years ago the peninsula became a gigantic island, and perhaps by 10,000 years ago the one island had become four as sea level rose still further. Thus, Santa Cruz Island has had some time alone out there in the Channel and, given its size, is something of a natural history laboratory.

Situated about half a mile west of the Ranch is the Santa Cruz Island Reserve. This research facility was established in 1966 under agreement between The Santa Cruz Island Company and the University of California, and is managed by UC Santa Barbara. The list of research papers from the facility is already long, and in 1976 the University published a twelve-page overview of the Reserve, on page two of which one can find the following paragraph under habitats: "coastal strand, coastal bluffs, grasslands, coastal sage scrub, chaparral, woodlands, pine forest, streams, marshes." Elaborated slightly, that paragraph indicates that of all the Channel Islands, Santa Cruz Island and surrounding waters host the greatest diversity of flora and fauna. For example, the Island supports about five hundred species and subspecies of native plants and there are at least six endemic taxa, five of which appear on the California Native Plant Society and the Smithsonian Institution rare plants list.

Diversity of terrestrial fauna, though not comparable to the mainland, is nevertheless rich by island standards. There are about forty-four resident species of birds represented, including brown pelicans, cormorants, pigeon guillemots, and black oystercatchers. The terrestrial mammals include the dwarf Island Fox, spotted skunk, and several species of bats. No freshwater fish occur on the Island, but northern coldwater and southern warmwater varieties are found close offshore. Regarding marine mammals, there are probably no breeding rookeries on the Island, but seals and California sea lions utilize the ledges and surrounding waters, porpoises and California gray whales are periodically sighted nearby, and elephant seals occasionally haul out on the beaches.

Which brings us to another prime aspect of the Santa Cruz Island topography—namely, those beaches, especially on the southern side and at the west end where there are some long ones. From the air, in a small plane, the succession of beaches —every one of them different and as often as not tucked into some rather unlikely space—becomes variation on a theme which defines this huge island. Along with the offshore rocks, sheer cliffs, steep headlands, and harbors.

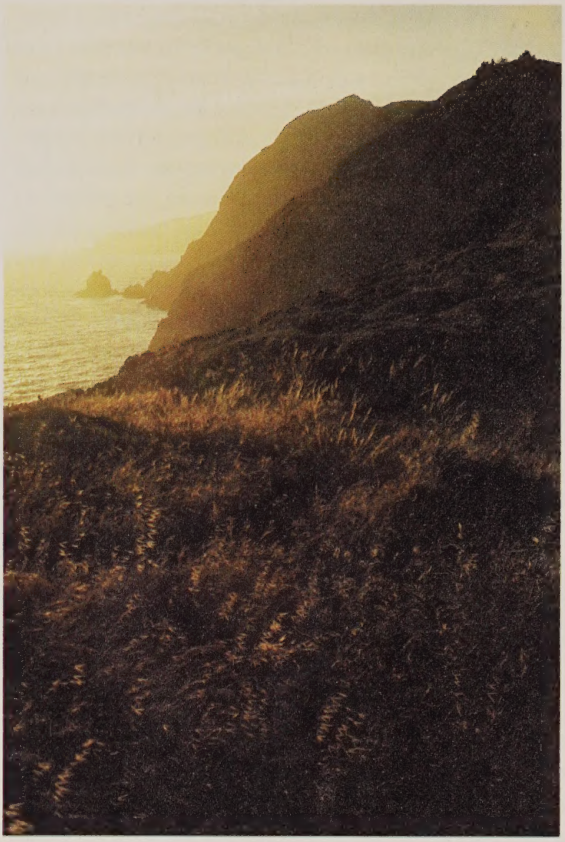
Preserving the Island

Carey Stanton has long entertained a vision of what should and should not happen to the future of the Island, and in 1975 these desires surfaced when Stanton approached The Nature Conservancy about a possible joint conservation effort to assure the preservation of Santa Cruz Island. Discussions took place during most of 1976, and by September of 1977 an option agreement between The Santa Cruz Island Company and the Conservancy was finally concluded. Under this agreement the Conservancy must exercise its option on July 5, 1978, and commit itself to a $4,000,000 project, of which $2,520,000 pays for the land; the rest is to cover interest, acquisition and fundraising expenses, start-up management costs, and to establish a $1,100,000 preserve endowment which will provide for the needed long-term management funding.

But the immediate fundraising goal is $3,000,000, or three-fourths of the total at the critical July 1978 date, as The Nature Conservancy moves now toward what is perhaps the most important private conservation acquisition in the West, while at the same time forging a remarkable partnership with The Santa Cruz Island Company.

Acknowledgments: I would like to thank Carey Stanton, Henry Duffield, Lyndal Laughrin (Santa Cruz Island Reserve), and Robert Brumbaugh (Department of Geology, UCLA) for logistical aid in the field; and Travis Hudson (Curator of Anthropology) and Clifton Smith (Librarian) at the Santa Barbara Museum of Natural History, and Michael Glassow (Dep't. of Anthropology, UCSB) for references provided.

References: W. H. Ellison, "History of the Santa Cruz Island Grant," *The Pacific Historical Review,* v.6,#3, Sept. 1937; M. A. Glassow, *An Archaeological Overview of the Northern Channel Islands, California,* Western Archaeological Ctr. of the NPS, Jan. 1977; T. Hudson and E. Underhay, *Crystals in the Sky: An Odyssey into Chumash Astronomy, Cosmology, and Rock Art,* Santa Barbara Mus. of Nat. Hist. (in press); C. L. Remington, "Natural History and Evolutionary Genetics of the California Channel Islands," *Discovery,* v.7,#1, Fall 1971; "Santa Cruz Island Reserve," UC, Natural Land and Water Reserves System, Feb. 1976; personal communication M. A. Glassow, T. Hudson, C. Stanton and H. Duffield.



Fair Winds from Spindrift Point

Portions of the following article are adapted from the forthcoming book, Outermost Headland, *which was begun by the late Charles Borden and is being completed, with the help of Eleanor Borden, by Annette Boushey.*

On the highest, furthest ledge at the tip of Spindrift Point, Charles Borden's tiny, hand-chiseled studio is nestled into the rock. Spindrift, a wave and wind-worn headland on the rugged Northern California coast, has spirit of place in large degree. This spirit emanates as much from the vision and dedication of Charles and Eleanor Borden as from the massive outcrops and from the "little people" of the Point, wanderers and home-makers on land, sea and air. A ship-shape and compact preserve, the Bordens' outermost headland is made up of four acres of top land with an extra eight acres stored vertically in cliffs.

The studio, surrounded on three sides by the movement and flux of the sea, was Borden's place *to get in unison with the depths within.* As he wrote shortly before his death in 1968:

This little eight-by-twelve foot sanctuary, which has managed to survive countless gales, helps me to realize how little I need. Having lived in small-boat cabins so much of my life, I never feel cramped. Austere as it may appear to others, to me it is taut and snug. It is just bare rock and unfinished timbers, but it opens on all sides; and the salt wind, the sun, the smell of coastal sage flow through its bareness.

Headlands have a special meaning for those who have followed the sea. For Charles Borden, who ran away to work on tramp freighters at the age of thirteen and spent the next twenty-five years setting sail to all corners of the watery globe, Spindrift Point was a fateful landfall which became the destination of a life-long quest.

It was long ago that I first sailed into the anchorage off the southern cliffs of Spindrift Point. This was no casual encounter: there was at once a deep recognition. There is something in the air, in the soil, in the balance of natural forces at Spindrift that I responded to at once. Exploring its silences, I knew that I would anchor here forever.

Charles Borden was equally well known, in var-

ious parts of the world, as a small-ship sailor, philosopher, and writer. His five published books have seen many editions and have been translated into five languages. He had almost no formal education, but was an omnivorous and passionate reader. As a seaman and later quartermaster, he was full of Melville and Conrad, unable, as he put it, to adjust to anything but sailing and writing. Conrad's *Youth* fired him with a resolve to see the Far East. At twenty-two Borden obtained a mate's license and sailed aboard a rundown Chinese collier along the South China coast.

When he could afford it, Borden had Ah King, a craftsman from a Hong Kong family that had been building boats for three hundred years, build to his order a sloop of Burma teak and camphor wood. It was in this teak lady, *Confucius*, that Borden made nautical history. As a honeymoon voyage in June, 1940, he and his first wife sailed from California to Hawaii in the 17-foot *Confucius*, the smallest ship to have made the passage. They were forty-six days at sea on this "cockleshell honeymoon," crossed by two bad blows of over fifty miles an hour. Eight hundred miles from Hawaii they ran into a series of squalls that came one after another at terrific force and broke every shroud and mast stay but one. Having used up every spare inch of cable, Borden describes his first sight of a tiny point of light on Maui as being *like the wave of a friendly hand greeting us from ashore. It was a great and joyous feeling to find Maui exactly where we expected it to be.*

Borden sailed in a variety of craft to all the main island groups of the Pacific. He loved the Polynesian islands, and at one time owned a plantation there. He admired and learned from the Polynesians' skill in sailing and from their ancient methods of celestial navigation. What he admired most, though, was the grandeur and simple wisdom of the islanders' attitude towards life. Borden felt that westerners often mistake appearances for reality and uphold artificial values, feeling isolated as a result. In the South Seas he found that things were often valued only for the joy of giving them away.

My voyage to Spindrift Point began early. And quite early in life, small ship sailing taught me how little one can get along with and what freedom and peace such simplification can bring. Thoreau has always been my Bible and the Pacific was my Walden—until I found this place.

It may take a voyager most of a lifetime to find the untamed spot of earth, the bay, the island or headland he is reaching for. But when found it provides a refuge for surveying without regret the illusions, trials and errors in the wake of long passages.

His years in the South Seas and aboard small ships gave Charles Borden an education of which he made full use. His recognition of the threats that our consumptive and materialistic civilization pose to other forms of life led to a conservation ethic which came to be embodied in his life and writing and in the legacy of Spindrift Point.

Spindrift came to The Nature Conservancy as a gift from Charles and Eleanor Borden in 1966. Before hearing of the Conservancy, the Bordens had searched for five years trying to find worthy stewards for their land.

It is only a little headland but how beautiful it is. So much of the delicate magic of life is still here. The first of the wildflowers—seaside daisies and footsteps-of-spring—are out, and the patches of lichen on the outermost ledges are showing new color. White-crowned sparrows sing from the cypress, and a few western grebes are down in the bay. The smell of new grass and spring earth—mixed with the strong pungent odor of coastal sage—is everywhere. Looking up a moment as I type this, long streamers of sprindrift are reaching across the bay and flowing southeast in ragged edges toward Pirate's Cove and the Golden Gate.

There is an eloquence in outermost things; the pulsebeat of the coast is in its headlands. The march of the seasons is marked here by the arrival of by-the-wind sailors, the red tides, the passing of the shearwaters on their 20,000-mile flight from Australia. Sun time, shadow time, wind time and sea time are the real times of the day and year. There is so much to be learned from watching the gossamer threads of migrating spiders, the opening of a blue-eyed grass. Measured in terms of enchantment, there are few things that compare.

On his first day of work as the Conservancy's Western Regional Director in San Francisco, Huey Johnson found a letter on his desk from the owners of a headland on the Marin County coast, explaining why they wanted to give their land away. *It is our desire that a tradition will grow up around Spindrift Point as a meeting of land, sea and sky held in trust for countless future individuals to retreat to for peace, solitude and quiet hours of contemplation.* Huey suspected that the letter might be a prank being played on him from back east. He went to Spindrift that very day.

The need here is for a preservation of natural conditions. The wisdom surely is to tread softly and not destroy irreplaceable fragile qualities. The normal balance of conditions favorable to the persistence of the many plants, birds and animals and the delicate balance of this relationship to human use and sharing should be well understood in order not to ruin forever values that can never be replaced. Paths need to be kept as unobtrusive as

Charles Borden

possible and it is important that some spots remain uninvaded by trails to protect the wildflowers and the indigenous shrubs that are the habitat of the birds and little creatures to whom the Point really belongs.

Huey Johnson's first visit to the Point, occurring on one of the fog-enshrouded days that seem to bring out its spirit, as at no other time, proved to him that Charles and Eleanor Borden and their outermost headland were very real indeed. The Bordens, in fact, were as delighted with finding The Nature Conservancy as Huey was with finding them. Looking back at that day, Huey Johnson, now Secretary for Resources for the State of California, sees it as a high point of his career with the Conservancy. He says that Charles Borden "expressed the essence of what The Nature Conservancy is all about."

The life of Spindrift Point, which is carried on and protected today by Eleanor Borden, is much the same as it was when her husband described it.

In our life-pattern at Spindrift Point, the discovery of the first wild strawberry, the arrival of the first violet-green swallow, are moments of considerable importance.

More so than ever before I take the time to savor young spring. If we don't take the time—what else is there really? Here at the Point the long and intermittent rains have produced such a bumper crop of wildflowers that it is quite difficult to walk out to the tip of Spindrift Point without stepping on something in bloom. It makes me feel as if I were walking among blue robin's eggs.

Out here I am constantly reminded of the process of renewal as new life mingles continually with the remains of the dead. Past ages never vanish completely, and there is much that never fully exists yet never quite vanishes either. In Spindrift's precipice-guarded pockets of living things, the evolutionary life-force has come down through the centuries unbroken in its essence. It is a fragile continuity that could easily be destroyed but never recreated.

The flora of this ecological island has remained relatively unchanged in the last few hundred years. And today the full native flora of the outer ledges and crevices remains as undisturbed as it was when Sir Francis Drake sailed by.

In this continuing, undisturbed relationship of each plant, shrub, grass and lichen to the promontory and to the small creatures who nest beneath, above and within—the basic interdependence of all things is plain enough. Like every outermost headland, the Point is a textbook on cliff, sea and seashore ecology.

Spindrift is graced with delicate meadows that fill each year with an elaborate and colorful wildflower show. Its resident little people include raccoons, skunks, lizards, mice and an occasional gray fox. Kingfishers, hawks and gulls soar over the sanctuary and cormorants nest in the shear cliffs that overlook the preserve. The rocks and waters offshore are a summer haven for the California brown pelican and a stop-over for western grebes, loons, tattlers, guillemots and Caspian terns. Some say that Spindrift may serve as well as a sea-mark for the migrating California gray whales that breach as they pass by the rocks at the tip of the Point.

Coves and headlands like this have vanished altogether, and new ones have risen. Over the milleniums, storms, wind and sun have worked their way along the coast in that endless, inexorable process by which headlands are formed.

The process of passing can be seen everywhere from the edge of the sea to the highest pinnacle. The Point says, again and again, nothing has permanence. Bone by bone, stone by stone, all crumbles away. The rocks, the lichen, the skeletal remains of a mouse or cormorant (itself a link with stone-age man)—all speak quietly of man's transience.

This headland travels. It has already come a long way. Its cargo, the evolving pageant of life,

has come a long way too. In each plant, each tuft of lichen, each spider and its web, is something of long voyaging. We are shipmates with the other creatures. Like the countless windships that have passed it, this headland is passing too . . . but unlike the ships, it is taking its time.

There are only a few golden hours that are allowed us to observe the other images of life. All of us are permitted just so many passages and then, whether the planking under our feet is of gold or fir, our hour strikes.

We chose this Point for what was seeming permanence, for a source of hope and meaning that will not die before we die. We have cared for Spindrift Point as a native plant and wildlife refuge, knowing that its greatest value is to remain undisturbed.

Our lives have changed, and the inland community has changed, but these outermost ledges and crevices remain the same. For the future, we know that no matter what happens to our own short-lived generations, there will be no pause in the flow of the winds over the rocky crags.

But what of the plants, birds and the little people that give the Point so much of its splendour? Within sight of Spindrift, the ugly hand of man is at work on a fast-buck subdivision scheme. Already on the inland hillsides beauty has been scooped out and replaced with a clutter of large, graceless houses and raw cuts through the earth. Spindrift is becoming a last, tiny refuge for many small creatures. Our hope for the life of the Point is in the strength of their instinct for survival. Even the lichen, growing on the most exposed and battered ledge, exercise an obstinate will-to-be. On this rocky ridge, every nook and cranny reveals evidence of a tenacious life-force in action.

Out here, we humans also dwell on a last refuge from the asphalt tides and roaring rivers of noise and exhaust. When a bank of fog moves up the coast enveloping the Point, it appears to be detached from the mainland. At such times we feel light years away from the inland world of mock progress.

Why are we so busy, so determined to change the landscape in a world not permanently our own? Just as there is mystery in the heart of a small bird or in the magnificence of a raindrop, there is endless wonder in the natural forms of a finger of land, with plant and animal life intact, that has so far escaped the frenetic and destructive waves of human activity. The fogs, cold winds and cold water that surround the Point are our most precious friends; they have helped to preserve a part of this coast.

We are dedicated to keeping at least this small outermost headland a place to remain aware of the eternity of creation. Sitting above the rolling waters, we sense a merging of earth-life and sea-life. The great rhythms of nature have here their spacious and primeval liberty. Seen and unseen migrating birds alight below; schools of fish move beneath the surface and are pursued by pelicans and cormorants. From the toad to the whale, every living thing has its own astounding beauty.

I have come to feel strongly that this land does not belong to us, but to the pelicans and cormorants, the skunks and raccoons, and all the forms of wildlife that have lived here or migrated through here for so many generations. Eleanor and I have maintained the Point intact as a natural conservation area, and we spent many years searching for a way to make sure that it will be maintained in the same manner after we are gone.

We felt that there must be an organization that would share our dedication to acting on the belief that it is also "progress" for people to learn to cherish what is unspoiled, and that sometimes the best management of land is to leave it alone. We wanted to donate Spindrift Point as an outermost sanctuary for flora and fauna, a place where members of our own short-lived generations could come to hear what these massive rocks and outcrops have to say.

We gave our land to the Conservancy for permanent preservation of its natural character and for scientific and educational use, and they granted us the right to reside on the property for the remainder of our lives as caretakers. In the autumn of 1967, Spindrift Point was officially dedicated a Nature Conservancy Preserve.

We have never regretted giving away our land. We could never have sold it. When people live on a piece of land like this, with awareness, they become part of it. If someone comes along and offers them more than it is worth, they still can't sell it because they are sutured down, as the Quakers would say. The roots that have been sunk—the things that they have heard and seen and smelled —have powerful meaning to them. That's the tragedy of bulldozers. You can't just knock down five trees with the excuse that it will all be the same when you plant five more. That's why I say that although we may have been here fifteen years, we still don't feel we know this place. We probably couldn't even after one hundred and fifteen, because of the constantly deepening relationship. No matter how much you do know, there is always so much more to it.

This headland, not really ours at all, is all we have had to pass on. It is a sanctuary we give to tomorrow.

Copyright 1978 by Annette Boushey and Eleanor Borden

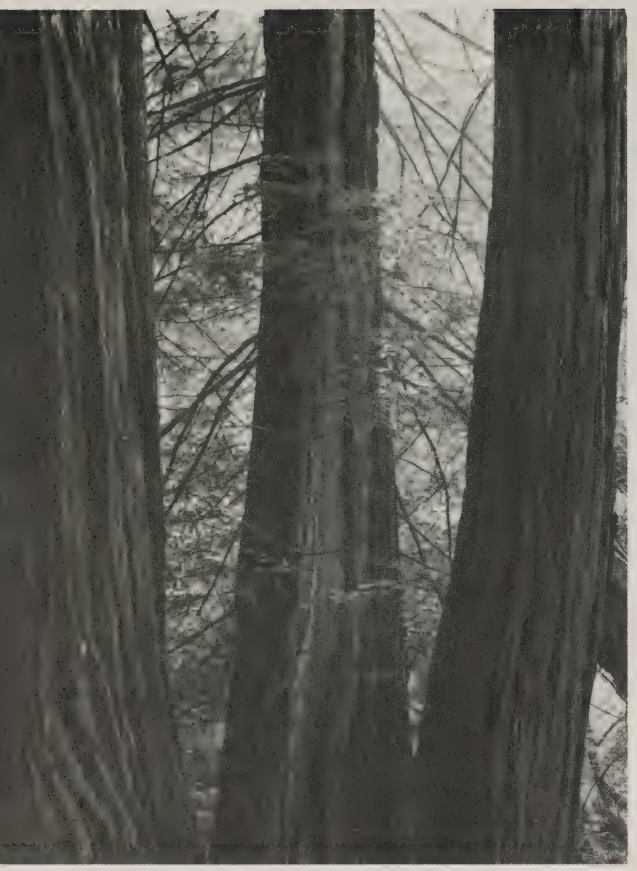
Big Creek: Landscape of High Drama

by Stephanie Mills, with Henry Little

It was just over a year ago, in January, 1977, that Peter Seligmann, the Conservancy's Western Land Steward, and I first visited Big Creek Ranch on the Big Sur Coast of California. Wedged into the front seat of a Jeep with Ed Landels, 78-year old San Francisco attorney, conservationist, and principal Big Creek Ranch owner, Pete and I frequently interrupted the winding one-hour drive down Coast Highway 1, from Carmel, to survey the breathtaking vistas and to watch migrating whales spout 500 feet below us.

—Henry Little

The Big Sur Coast is a landscape of high drama. Its headlands' steep, sudden rise from the sea suggests a powerful force at work—here the floor of the Pacific Ocean plunges under the western rim of the continent, churning up a young mountain range raw in its beauty. Nowhere do the Santa Lucia Mountains sweep up more abruptly from the shoreline than at Big Creek Ranch, where nearly 4,000 acres embrace a pristine watershed, two perennial streams, natural springs, four miles of rugged coastline, 32 distinct biological habitats, and an estimated 13 million board feet of virgin Redwoods.



Redwoods

Santa Lucia Mountains

Because Big Creek is a biological crossroads between northern and southern California, an extraordinary array of the state's coastal vegetation is concentrated in the preserve. The desert yucca is neighbor to the giant Redwood. Mixed evergreen forests flourish in the rugged valleys. Lush creekside communities fill the canyon bottom. There are kelp forests offshore, grasslands covering the high ridgetops, and some of the most beautiful coastal sage communities in the state. A variety of trees grow at Big Creek: a southernmost stand of Redwoods, groves of gnarled oak—their spicy scent lingering in the air—and a majestic gathering of Ponderosa pine that crowns a rise overlooking the sea.

This diversity of vegetation and terrain provides habitat for an equally wide array of wildlife, including mountain lions, coyotes, blacktailed deer, bobcats, and endangered sea otters. Some 125 bird species have been observed, including eagles, hawks, owls, and myriad shorebirds. Big Creek is also one of the last central coastal areas that supports a vigorous annual run of steelhead, their presence attesting to the ecological health and undisturbed character of the land. Spared from burning in the 1977 forest fire, and believed by scientists to abut one of the current centers of active plant species evolution in California, Big Creek Ranch offers a diverse gene pool from which native species can recolonize adjacent burned areas.

During the past year, three conservation organizations—the San Francisco-based Save-the-Redwoods-League, The Nature Conservancy, and the University of California's Natural Land Water Reserves System—have combined their resourcefulness to assure Big Creek's preservation. In June 1977, the Conservancy secured an option to purchase the Big Creek Ranch for approximately $1.5 million, a bargain granted by the ranch's 12 owners who had long sought to preserve the land through sale to a conservation organization.

Once purchased by the Conservancy, the ranch will be transferred to the University, where, for more than a decade, the Natural Land and Water Reserves System has been building an "ecosystem library" of sites throughout California that are used for field research and education. Because of its diversity and unspoiled quality, Big Creek offers more opportunities for multidisciplinary study than any other site in the University's system. Dr. Kenneth S. Norris, natural historian at U.C. Santa Cruz—which will have day-to-day management responsibilities for the land—has indicated that 36 courses in the natural sciences could be taught at Big Creek, including marine zoology, kelp forest ecology, invertebrate zoology, hydrology, natural history of California, and coastal zone planning and management.

Big Creek's educational potential extends even beyond academic opportunities. Because responsible stewardship of the area requires involving the public and stimulating an awareness and appreciа-

California live oaks

"Big Creek and its unviolated watershed represent the most unique and beautiful area of the Santa Lucia Mountains facing the coast between Carmel and San Simeon. It is worthy of dedication and preservation. I think of it as one of our most potentially important reserves. . . ."

—Ansel Adams

tion of the country's natural heritage, The Nature Conservancy will develop a limited public educational-use program compatible with preservation of the property's natural values. The Conservancy will also retain a 10-acre site on which a cabin will be constructed to serve as a center for these activities. An interpretive trail beginning at the cabin and leading through several representative plant communities, including the Redwood groves, will be created. The trail will be used for guided walks as well as for less supervised public access.

To fund the purchase of the area and to assure that adequate funds would be available for managing the Big Creek Preserve, the Conservancy initiated a $1.8 million fund-raising campaign in June, 1977. Of this amount, $1.5 million will be used to pay for the land (principal and interest), $50,000 for the Conservancy's acquisition and fund-raising expenses, and $50,000 for construction of the cabin and beginning costs of the Conservancy's use program. The remaining $200,000 will be used to establish a management endowment to offset the University's annual maintenance costs.

In July and August, 1977, leadership grants from the William and Flora Hewlett Foundation of Palo Alto, California, and from Mr. and Mrs. Kenneth E. Hill of Rancho Santa Fe, California—coupled with a $200,000 commitment from the University—launched the Conservancy's campaign. But it was not until November 29, 1977—two days before the option exercise deadline—that the Conservancy's purchase of Big Creek was assured. On that day, the Save-the-Redwoods-League donated $500,000 to the Conservancy, boosting Big Creek receipts to $1.5 million and guaranteeing a successful campaign. The Conservancy was then able to exercise its purchase option on December 1. A major factor in the League's decision to offer the grant was a generous, last-minute $100,000 price reduction made by the sellers, as a further expression of their commitment to the preservation of Big Creek.

In the spring, in honor of Ed Landels' and Mr. and Mrs. Kenneth E. Hill's foresight and generosity, The Nature Conservancy will dedicate the preserve as the "Landels-Hill Big Creek Reserve."

CALIFORNIA

1 **Big Creek.** Redwood forest, 4 miles of rugged coastline, pristine watershed, natural springs, and 32 distinct plant communities. 4,000 acres. (See page 13).

2 **Bishop Pine Preserve.** 401 acres with two ridges, several springs, rare Bishop pine.

3 **Bolinas Lagoon (Kent Island).** Intertidal lagoon mudflats. Frequented by seals and migrating birds; feeding area for black brant. 110 acres.

4 **Buena Vista Lagoon.** Series of freshwater lagoons formed by sand bars at the mouth of an estuary. Winter refuge for migrating water birds. 56 acres.

5 **Children's Beach.** 1-acre recreation area on Tomales Bay.

6 **Elkhorn Slough (Lillian D. Hohfeld Nature Preserve).** Only major undisturbed salt marsh along 250 miles of California coast. (See page 23).

7 **Martha Alexander Gerbode Preserve.** 2,138 acres of grassy, rolling coastal mountains in Marin Headlands. Part of Golden Gate National Recreation Area.

8 **Hibberd Property.** 1,471 acres in San Luis Mountains. Refuge for golden eagles and mountain lions.

9 **Jack's Peak.** 1,000-foot summit overlooking the Pacific; Monterey pine and wildflowers. 55 acres.

10 **Knapp Salt Marsh.** 457-acre habitat for waterfowl, shorebirds, and harbor seals.

Pacific Coast Projects

of the Nature Conservancy

11 **Lanphere-Christensen Dunes.** 48 acres of undisturbed coastal sand dunes, beach pine forest. (See page 24).

12 **Las Cruces Easement.** Coastal grasslands, headwaters and watershed of Las Cruces Creek, steep wooded slopes. Scenic easement on 500 acres.

13 **Molera State Park.** Mountain ridges, rolling hills, and coastline at mouth of the Big Sur River. 2,121 acres.

14 **Point Reyes National Seashore.** 3-acre inholding in National Seashore.

15 **Purpus Property.** 2-acre coastal terrace providing access to the beach and tidepools below.

16 **Rancho Montana de Oro.** 4,435 acres of magnificent canyon country fronting on the Pacific.

17 **San Francisco Bay Project and Lower Tubbs Island.** A series of gifts and purchases begun in 1969 to preserve the Bay's remaining marshes and tidelands so important to shorebirds, migrating waterfowl, seals, and other fauna. Over 1,300 acres.

18 **Santa Cruz Island.** 55,000 acres on the largest of the Channel Islands. Habitat for brown pelican, Channel Island fox, and 9 rare or endangered plant species. (See page 4).

19 **Slide Ranch.** Headlands laced with small streams and dotted with cypress groves. 133 acres. Part of Golden Gate National Recreation Area.

20 **Spindrift Point.** High, rugged bluff overlooking the Pacific; cormorant rookery. 4 acres.

21 **Hope Wheelwright Preserve.** Coastal bluffs, eucalyptus, ravines, lush green grasses in the Marin Headlands. 625 acres. Part of Golden Gate National Recreation Area.

OREGON

22 **Cascade Head.** Headlands and 1,400-foot promontory jutting into the ocean at the mouth of the Salmon River. 300 acres. (See page 18).

23 **Cox Island.** 187-acre estuarine salt marsh interspersed with tidal channels and large expanses of mudflats. (See page 22).

24 **Neahkahnie Beach.** Beach and sand dunes with native species of herbs, shrubs, and trees.

25 **Rain River Preserve.** 150-acre freshwater marsh in Tillamook Bay, a valuable estuary and wildlife habitat.

26 **South Slough.** Near-pristine estuary edged with salt marsh, eel grass, and mudflats. Habitat for river otter, shorebirds, waterfowl. 2,220 acres.

WASHINGTON

27 **Birch Bay.** 20-acre shorebird and waterfowl habitat fronting Birch Bay and Terrell Creek.

28 **Cypress Island.** 156 acres on island in Puget Sound; nesting area for bald eagles.

29 **Cyrus Gates Memorial Preserve.** Pristine 5-acre island in Chuckanut Bay. Undisturbed island with excellent research possibilities.

30 **Goose and Deadman Islands.** Completely undisturbed examples of San Juan Archipelago upland, shore, and sub-tidal communities. 5 acres.

31 **Foulweather Bluff.** 100 acres of marshland, beach, and upland forest.

32 **Point of the Arches.** Highly scenic coastline with sandy wilderness beach, coves, tidepools, unusual rock formations. 168 acres. (See page 20).

33 **Protection Island.** Rocky shores inhabited by nesting colony of rhinoceros auklets. 48 acres.

34 **Waldron Island.** 273 acres of white sand beaches, marshes, lakes, and evergreen and hardwood forests. Refuge for seals, otters, bald eagles, shore and sea birds.

CANADA

35 **Nels Bight.** 65 acres of white sand beach and forest on Vancouver Island's Cape Scott. Waterfowl feeding and nesting grounds.

Cascade Head

by Robert Michael Pyle

If Lincoln City is where everything about the Oregon Coast went wrong, Cascade Head is its opposite. To reach the Head, you leave the gaudy knot of seaside development in Lincoln City and head west across the Salmon River, passing a fine old, huge barn. Then the world of the Head takes over, erasing the ennui of Highway 101 and its "resorts" (one is tempted to call them "last resorts").

Most visitors to The Nature Conservancy's Cascade Head Preserve go in summer, when wildflowers color the unusual seaside grassy bluff. Autumn and early spring are popular too, when migrating gray whales might be seen from the Head's high vantage. But the test of a place often lies in winter, the subtler season, when flowers and birds are few.

I made a winter visit to Cascade Head to acquaint myself with some of its stewardship problems. After crossing the stile beside the wooden entrance sign, I found that the path passed through woodland for some distance before mounting the sea vista. Snow lay lightly on the forest floor, pierced by the winter-paled shamrocks of *Oxalis*. Sun fell through the club mosses hanging from leafless vine maples and landed on ferns below. A shrill, chill wind cut the edge of the forest, but its protected interior was still enough so that I could hear a foraging winter wren. I waited; it appeared momentarily on a mossy log.

The gentle trail ran between big, old-growth spruces, then beside a pallid alder wood. Golden-crowned kinglets clinked in the spruce; band-tailed pigeons boomed over the alder. Almost all the colors were Oregon winter hues—grays, dark or yellowish green, russet browns—but a single foxglove flower stood out, a magenta footnote to the past season. Against the soft winter background, colors juxtaposed noticeably: an old green water tower against mossy branches and withered green elder leaves; chestnut-backed chickadees perched above rusty-colored, dying mushrooms called chanterelles. Soft colors, little movement, then a contradiction: an entire tree alive with flocking varied thrushes, their brilliant orange breasts and eyestripes contrasting vividly against the winter vegetation through which they moved, making very soft noises. I had never seen so many of these mountain birds, which seek the seaside in winter.

I left the woodland and emerged on the grassy meadow, where the spectacle was far from quiet. The wild November wind whined up the slope, blowing off the coast that now lay exposed

for brilliant miles. The scenic capacity of the preserve became apparent. As I walked toward the spruce-studded headland, I gained a magnificent view of the Salmon Estuary, its dunes and beaches and the serpentine shoreline beyond.

If the panorama was striking, however, so was the biological problem on the preserve. The meadows of Cascade Head roll up and down the slope like alpine tundra, but clearly they were dominated by last season's dead and drying tansy ragwort. Tansy, an introduced yellow composite, is a tenacious and highly adventive plant that has invaded much Northwest pastureland in recent years. It is as hostile to native wildflowers as it is toxic to cattle. Furthermore, Cascade Head may be a home for the very rare Oregon silverspot butterfly (*Speyeria zerene hippolyta*). If so, the meadows would become unsuitable for the butterfly should the ragwort exclude the violets upon which the fritillary's larvae feed. However, I was relieved to find violets, as well as lupines and other native wildflower foliage in the meadow. In fact, to my surprise, I found one violet in bloom and a second in bud beside a patch of ice on the rutted trail. The Conservancy is presently involved in cooperative biological control projects—using the cinnabar moth and a ragwort-eating flea beetle—and in continuing research to diminish the grasp of the tansy ragwort on the Head's meadows.

Besides the violets, several other summer relicts defied the brash and bitter headwind of the slope. In an alder swale beside a spring, a grasshopper torpidly picked its way; then, having collected enough of the full sun, it disappeared in a giant leap. Woolly Bears, the black and rusty-colored, furry caterpillars of tiger moths, sought wintering positions along the trail. I wondered, when the day was so cold in bright sunshine, how these insects made it through the night.

Struggling against the wind, I reached the stone-and-spruce-sheltered headland. Glazed beaches and molten metal waves hurt my eyes but quickened my pulse. A wild, stony cove lay below steep cliffs to the north, interrupting the view toward Cape Lookout. The soft grass swells fell away toward the hard, icy rocks of the shore.

From the ultimate viewpoint on Cascade Head, you see little that clashes with the preserve. The great grassy knob of the Head has only limited and subtle development around its wooded base. Near the preserve's eastern limit, the Sitka Center for Art and Ecology furnishes both creative users and watchful neighbors for the preserve. Also, much of the larger area all around the preserve lies within U.S. Forest Service jurisdiction.

The Cascade Head Preserve was established in 1966 when a dedicated group of interested, independent conservationists arranged for the Conservancy's acquisition of this remarkable and valuable ranchland for only $50,000. The area acquired by the Conservancy is the very heart of the Head—a gem for both its scenic and ecological qualities. The entire Cape and estuary have been designated the Cascade Head Scenic Research Area, a category that is bound to ensure a favorable climate for pursuing our stewardship goals for the Cascade Head Preserve.

With the gaudy development of Lincoln City so near, you don't need a further reminder of what might have happened to Cascade Head. And the greatest value of a preserve like the Head lies in its radical difference from a place like Lincoln City.

Point of Arches

by Ruth Kirk

A lone cormorant is stroking past, its neck outstretched as if its head were in more of a hurry than its body. Sanderlings probe the glistening sand at water's edge, and the surf murmurs at a distance because the tide has ebbed. Only occasionally does a wave leap high enough to catch the orange of the fading sunset.

I'm sitting with a silvered log as a backrest, my toes dug into the sand. I've known this beach for about twenty years—a period so short as to be nonexistent if viewed in the long perspective of evolutionary events here; yet during this time, I have been drawn again and again to this beach. Point of Arches is perhaps the single most breath-taking stretch of all the entire superbly beautiful Pacific coast strip running along Washington State's Olympic Peninsula. During ebb tides there are pools rich with sea life, and during full-minus tides you can walk through the arches, out among the seastacks.

Once the land belonged to Makah Indians, whale hunters whose single remaining village is at nearby Neah Bay. I have a Makah friend whose family lived here at Shi Shi Beach in the "old days," and another friend whose grandmother used to walk the beach carrying the mail after the days of white settlement had begun. That time was scarcely over a century ago. All of the Peninsula, and this area particularly, stayed a quiet backreach until recent years. When my husband and I first started coming here, it was a still a little-known corner. We once visited Shi Shi with a friend from Los Angeles. When dusk brought another camping party walking down the beach, we almost packed up and left in annoyance. We never before had shared this beach.

The area still is essentially roadless. From the Makah Reservation, you wade through two or three miles of mud via an old fire patrol trail, then drop to the beach and hike another mile or so to reach the point. Alternatively you can hike north from the Ozette River and cut up over a headland. But unless you know the route, you'll be struggling through head-high sword fern and cow parsnip and salal so tangled and dense that progress will be held to about one step a minute. Neither mud nor salal keep people away any longer, however. Backpackers and beachcombers know the area well. A Seattle sculptor has carved oversized figures set like totem poles beside streams. The prospectors who panned gold from the sand at Petroleum Creek during the 1960's are

gone, but in their place the '70's have brought people wanting to live with nature and food stamps. Their shanties line the beach behind the row of drift logs, quite unobtrusive at the forest's edge. One of these "residents" brought out his guitar to add to ours around the campfire a few nights ago, and I discovered that he is from my own alma mater.

Change is the one constant of all nature and of human culture. But some kinds of change would be wrong for Point of Arches; so I rejoice at The Nature Conservancy's successful efforts to protect this untouched last bit of wild shoreline. With the endorsement of the American Land Trust, the Conservancy has transferred the area to the National Park Service and it has been added to the Olympic National Park. State government, the logging industry, the Conservancy, and the Park Service worked together on preserving Point of Arches. If such cooperation augurs the future, it is the kind of change we should applaud. I can keep coming to sit on this beach, to dig my toes into the sand and watch the sunset. And so can the others, for if the beach is left alone, it wipes itself clean with every turn of the tide.

As I sit now, the orange sheen of a day's end has gone from the sky and the water and the wet beach. The sanderlings have flown. An eagle has flapped past and landed in a snag. The waves are quickening as the tide starts in. Behind me a full moon is rising to silhouette the spruce and cedars.

Point of Arches was acquired with the assistance of the Elmer Feldenheimer Land Preservation Fund, a $500,000 revolving fund established in late 1977 as a living trust for use in five Northwest states with preference for Oregon projects. The fund was a gift of the late Elmer Feldenheimer, orchardist, outdoorsman, and member of the distinguished Portland jewelry firm of A.&C. Feldenheimer. He was a quiet man of great integrity and sensitivity.

The new fund—the largest known cash conservation gift in the Northwest—greatly enhances the ability of the Conservancy's Northwest Office to move quickly to preserve threatened natural areas.

Cox Island

by Eveleen Henry

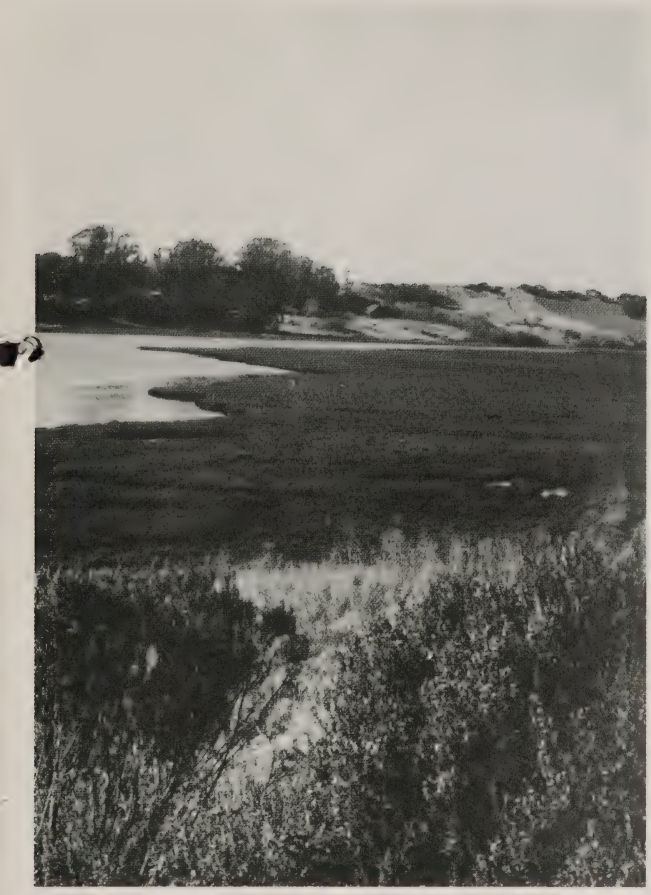
Cox Island is the dominant land feature of the Siuslaw River near Florence, a central coast Oregon port. Twice a day, with the tides, the waters run in and out of this nutrient-screening island. But when the Pacific is storming, seven miles away, the Siuslaw reacts and changes. Most of the salt marsh disappears and only a few acres of Sitka spruce, neglected orchard, and a weather-abused house—long abandoned to barn swallows—are visible from Highway 126. Then, just a few hours later, after rough weather subsides, the marsh miraculously reappears. Five grass communities—immature high marsh, low sandy, carex, bulrush, and high mature marsh—continue the island's daily cycle. The diversity and numbers of animal species that use Cox substantiate the extraordinary vigor of the island's estuarine system.

Pintail ducks, hawks, osprey, egrets, and herons use Cox Island for nesting and feeding, along with as many as 75 other species of birds. Beavers, river otters, muskrats, and mink reside on the island, while harbor seals, deer, and raccoons visit. The surrounding shrimp flats and clam beds are the most productive in the Siuslaw River. Fish, such as sole and starry flounder, and shellfish feed here in quantity because large amounts of nutrients are trapped in the marsh substrate. Considering the diversity and health of the Cox Island marshes, it's not surprising that the area is regarded as a gem in the Conservancy's Northwest preserve portfolio.

Cox Island appeared early on the Oregon Natural Heritage Program's inventory as a high priority area for preservation. It was one of the first sites actively sought by the Conservancy's Northwest Office as a result of urging by the Heritage staff. The island's owner, Champion International Corporation (formerly U.S. Plywood), was impressed with the Heritage Program's case for protecting the island as an excellent example of estuarine marshland. Champion donated Cox Island to The Nature Conservancy in 1977 as a preserve where the representative vegetation and diverse wildlife could be protected and studied.

As important as Cox Island is to the overall health of the Siuslaw River, it is best known for the white house that is so visible from the highway and is inaccessible except by boat. The house, built by Captain William Cox in 1902, was the model for author Ken Kesey when he created the Stamper house in *Sometimes a Great Notion*.

The first meeting of the management committee for the Cox Island Preserve reflected the island's importance. Representatives of the Town of Florence, the Port of Siuslaw, the University of Oregon, Oregon State University, Champion International, and the Oregon Wildlife Commission met to discuss possibilities for studying the marsh's productivity. The committee members are also concerned with the long-term preservation of the marshland, since its relationship to the Siuslaw estuary is critical. The marsh communities have been inventoried, but detailed studies of the animals that depend on the island have not been completed. The management committee has mapped out a preliminary list of research to be undertaken over the next few years. Also, the committee decided, unanimously, not to raze the old house, leaving open the possibility for its restoration.



Elkhorn Slough

Midway between Monterey and Santa Cruz on the California coast, an arm of the sea reaches inland about seven miles. This narrow tidal channel, meandering through vast marshes surrounded by rolling hills, is known as Elkhorn Slough. The Elkhorn Slough estuarine system encompasses around 2,500 acres of tidal flats and submerged and semi-submerged land, including the second largest salt marsh remaining in California.

Elkhorn Slough provides some of the only remaining habitat for several rare and endangered species, and is well known to marine biologists, ornithologists, fishermen, and shellfish enthusiasts for the variety and abundance of its marine and bird life. The natural productivity of this coastal marsh sustains a large percentage of the west coast's migratory birds, since it is an important link in the Pacific flyway. Wading birds, egrets, herons, brown pelicans, terns, and the endangered California clapper rail all use portions of this varied marsh habitat. At least 73 species of fish have been identified at Elkhorn Slough and scientists suspect that a significant number are directly dependent on the slough environment at some phase of their life cycles. The slough is also rich in a number of invertebrates including crabs, amphipods, shrimps, oysters, barnacles, clams, and worms as well as being an occasional haul-out site for California sea lions. These diverse elements combine to create the incredibly rich Elkhorn Slough environment.

The Nature Conservancy has been working on a preservation program for Elkhorn Slough since 1969, and has so far set aside some 450 acres of the area's critical marsh and watershed lands in five separate acquisitions. Since all the marshland along the estuary is part of an interrelated system, the fate of one part affects the whole. Therefore, the Conservancy is continuing its efforts to protect more of the delicate Elkhorn Slough estuarine system. The California Field Office is fund raising for management and expansion of the preserve.

Lanphere-Christensen Dunes

There are only certain places where the rugged northern Pacific shoreline becomes flat and wide enough for sand dunes to form. Ten miles north of Eureka, California, there is a place where sand dunes build to heights of over 50 feet. The area, known as the Lanphere-Christensen Dunes, contains one of the finest examples of sand dune succession on the entire Pacific Coast. In this special location, conditions are exactly right for all stages of dune evolution and for the delicate balance of this system to be maintained.

The dynamics of sand dune succession are graphically displayed within the undisturbed Lanphere-Christensen Dunes system. Though temporarily stabilized by colonizing grasses, the dunes are constantly shifted by the wind. Behind these shifting dunes a dense, mossy pine forest struggles against the intruding sandy slopes. Still further back lie tidal mud flats. In the springtime the dunes are covered by a kaleidoscope of wildflowers. The ever-changing environment hosts a variety of birds and mammals.

A conservation easement on 133 of the preserve's 183 acres was donated to the Conservancy in 1975 by Hortense Lanphere. Mrs. Lanphere and her late husband, Dr. Lanphere, both biologists, had aggressively protected the dunes, and they, along with neighbor Darrell Christensen, are primarily responsible for the pristine conditions of the dunes today. At the same time, Mr. Christensen sold an additional 50 acres to the Conservancy. He also now assists the Conservancy and Humboldt State University in jointly managing the preserve.

Ecology Forum

No. 27
by Robert Michael Pyle
Northwest Land Steward

Drawings by Sarah Hughes

THE IMPORTANCE OF THINKING SMALL

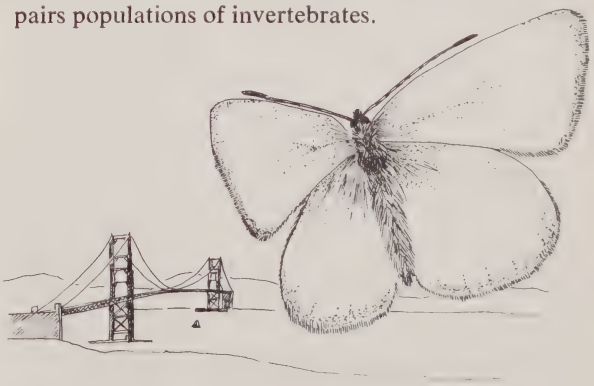
Insects comprise easily three-quarters of all animal life. Together with other macro-invertebrates such as spiders, mites, worms, mollusks, and crustaceans, their dominance of the animal kingdom is even more overwhelming. Even plants, as prolific and diverse as they are, compete poorly with invertebrates for numbers of species and individuals. The biomass of the Giant Sequoias is less than that of the tiny springtails (Collembola, wingless insects) in the soil beneath the redwoods' boughs. Clearly, life is top-heavy in favor of animals without backbones.

Keeping this in mind, consider the traditional emphasis of biological conservation. The wildlife movement has been as biased toward the larger animals as *Systemae Naturae* is toward the smaller. It seems logical—and our knowledge of biological systems concurs—that, given their abundance, invertebrates must be extremely important in maintaining stability. Yet, they have been almost completely ignored by conservationists. Should we not consider a new emphasis on the positive management of beneficial invertebrates?

To be sure, a great many species of invertebrates are beneficial to humans. One hears a great deal of bad press about insect pests; yet, only a small fraction of arthropod species cause any direct damage to human interests. The rest are benign, or outright beneficial, such as honeybees and silkmoths. Other values may be less obvious but at least as far-reaching. Aquatic insects, crustaceans, and mollusks can elegantly indicate water quality and other variables. Insects on the whole serve both as vital selective agents for improving plants, and as a vast protein source for songbirds and other consumers. Furthermore, in a world whose need for aesthetic appreciation grows as its diversity shrinks, the intrinsic value of butterflies, sea shells, and other striking invertebrates cannot be disregarded.

Protection of small-scale wildlife offers special challenges. If potent chemicals fail to subdue insects that compete with us for food or fiber, what could possibly threaten them? And if a threat really does exist, how does one go about conserving invertebrates?

Because of their extremely high reproductive capacity, most mobile invertebrates stand little chance of over-depletion by direct predation. This is why the butterfly collector presents very little danger to most butterflies: as lepidopterists know, it is next to impossible to over-collect flying insects. No, the collector is neither the cause of insect endangerment nor the target for protective remedies, except in cases of very rare, stressed, or local populations. Chemical pesticides have often been implicated in the local diminution of honeybees, and they no doubt affect soil invertebrates, butterflies, aquatic insects, and others. But such reduction is only a part of the much larger problem of habitat disturbance. Many invertebrates are closely linked to specific types of habitat and cannot quickly adapt to others. So it is land alteration—plowing, grazing, building, paving, damming, dredging, or otherwise changing—that truly impairs populations of invertebrates.



Xerces blue

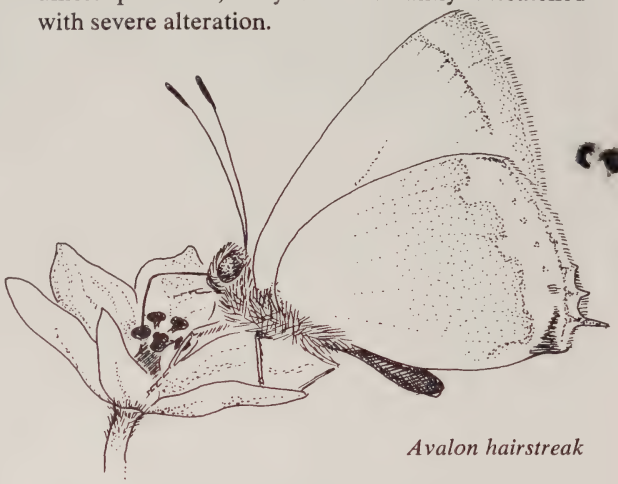
It follows that habitat preservation provides the only reliable way to conserve insects and their associates. Are they not, then, incidentally protected whenever a national park, wilderness area, or nature preserve is set aside? Certainly; but since such

areas traditionally are defined by vertebrate and plant values, we cannot be sure that invertebrates will be effectively represented. As it happens, specific attention to rare invertebrates is necessary after all, to ensure that potentially helpful populations are not lost. Of course, this often occurs before we even know that the invertebrates were there. Perhaps four-fifths of Hawaii's native lowland insect fauna was extirpated before it was even adequately catalogued. In this light, the role of the insect collector can be seen as positive: you can't protect a butterfly until you know where it is.

Once a small-animal problem has been identified, much can be done to resolve it. Efforts have been underway for a decade to actively conserve rare insects, mollusks, and crustaceans in various parts of the world. The United Kingdom employs several scientists on these kinds of projects. Spain has a red data book for butterflies. Papua New Guinea included insect conservation in its national constitution. The United States has listed eight butterflies as threatened or endangered, and others—as well as a list of beetles—are under consideration. Naturally, The Nature Conservancy has a role to play here. In fact, the country's first nature preserve established largely for the presence of a rare butterfly was a Conservancy project. Called Moxee Bog, this post-glacial relict quaking bog in a sage desert setting is one of very few habitats in the Pacific Northwest for the silver-bordered fritillary butterfly (*Boloria selene*). The Conservancy's Western Regional Office has become involved in invertebrate conservation in several other ways as well. A brief review of some of these projects may furnish others with suitable "small" ideas.

The xerces blue (*Glaucopsyche xerces*), first full species of butterfly driven to extinction by American development, formerly occupied the San Francisco Peninsula. (It is this butterfly that gave its name to the Xerces Society, an organization concerned with rare insect habitat preservation.) Several other subspecies of insects and plants were lost as the Bay dunes were leveled for buildings and parks, and others are critically endangered today. One of these, a brilliant small butterfly called Lange's metalmark (*Apodemia mormo langei*), survives on a very few acres in industrialized Antioch, California. In order to prevent the metalmark from going the way of the xerces blue, the Western Regional Office has been involved in a cooperative project with the Fish and Wildlife Service to acquire critical duneland habitat.

Up the coast, the Northwest Field Office and the Oregon Natural Heritage Program are working with Dr. David McCorkle to pinpoint possible preserves for the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). McCorkle, who originally was responsible for the Moxee Bog Preserve, has learned that the silverspot is endemic to a very few saltspray coastal meadows where their caterpillars feed exclusively on violets. These meadows comprise prime building and recreational sites, so unless protected, they are constantly threatened with severe alteration.



Avalon hairstreak

By collaborating with other invertebrate zoologists, the Conservancy is trying to learn of ways in which various regional rarities may be protected. Among the organisms we are looking at are the Columbian tiger beetle (*Cicindela columbica*)—and other cicindelids whose ranges have been severely impaired by dams and dune buggies—and the Oregon giant earthworm (*Megascolides macelfreshi*), one member of an endemic earthworm fauna that has been seriously affected by changes in soil structure. Cynics may laugh, but what is more fundamental than the soil? And what builds soil more effectively than native worms?

Conservancy stewardship programs on the West Coast are beginning to turn significant attention toward invertebrates. The invasion of Cascade Head, Oregon, by tansy ragwort is a pervasive problem that the Conservancy cannot hope to solve alone. However, we are cooperating with others to test biological control methods on tansy involving the use of cinnabar moths and a ragwort-feeding flea beetle.

A crucial aspect of stewardship is the biological inventory process. Insects and other microfauna usually receive rather limited and perfunctory treatment in these biotic analyses. This is understandable—the expertise may not be readily available for proper arthropod sampling and identification, nor is it a job for the uninformed. Still, talented amateurs and students frequently can be found who will be glad to sample at least the groups of invertebrates in which they are particularly interested. This summer, the Northwest Office will

(continued on page 30)

The American Land Trust

FOR THE BIRDS

by Lynn Mohn

There are only 40 Mississippi sandhill cranes left on this planet. But these 3½-foot-tall, red-crowned, gray-plumed birds were not recognized as an endangered species until 1972.

Two years later, The Nature Conservancy bought 1,708 acres of the cranes' Jackson County, Mississippi, habitat from a developer and transferred it to the U.S. Fish & Wildlife Service. The property, between Biloxi and Pascagoula, became the first acquisition for the proposed 16,000-acre Mississippi Sandhill Crane National Wildlife Refuge.

In December 1977, thanks to St. Regis Paper Company, the existing refuge more than tripled in size. Under American Land Trust auspices, St. Regis sold 5,093 acres and donated the equivalent of 936 acres of wet pine and grass savannah to the Conservancy. The sale, at $3,775,000, was about $700,000 below fair market value. Fish & Wildlife has repurchased the land for the refuge, which now contains over 8,600 acres and gives the cranes a critical new lease on life.

Within days of the St. Regis sale, several other transactions took place . . .

Over 15 square miles of wild mountain land in Vermont, including 3,000-foot summits and an entire watershed near Stowe, worth over $2 million, was acquired for $1,575,000 from Burt Forests, Inc. The 10,000-acre property is earmarked for resale to the state, but the Conservancy and the Trust must still raise $100,000 from the public to finish the project.

In Tennessee, sheer sandstone cliffs, 250 feet high, create inaccessible gorges at Savage Gulf, where sparkling waterfalls and two endangered plants are also hidden in virgin forests. The J. M. Huber Company sold 4,138 acres of Savage Gulf, valued at $779,000, to the Conservancy for $600,000. Joining in the transaction with a donation of mineral rights was AMAX Coal Company. The land, located in Grundy County, will go to the state of Tennessee to double the size of the existing Savage Gulf State Natural Area.

Elsewhere, the largest great blue heron rookery in Maryland—Nanjemoy Creek—30 miles south of Washington, D.C., was optioned by the Conservancy. While half of the $133,445 purchase and stewardship cost was raised by the February deadline, the remainder is needed by the end of 1978.

One of the most dramatic undeveloped islands on the Maine coast—125-acre Long Porcupine Island in Frenchman's Bay—was the gift of A. Atwater Kent, Jr., who also provided an endowment fund for future stewardship. A second gift, 102 acres at Connecticut's Beeslick Pond, where the rare dwarf birch grows, came from four sisters, Elise B. Lufkin, Louise B. Scott, Sue E. Blagden, and Alison G. Blagden.

The north end of Prudence Island, in the heart of Narragansett Bay, contains one of the largest remaining salt marshes in Rhode Island. A 670-acre tract was purchased and is being held in trust for the state's Bay Islands Park System.

With a November high of $22,742, National Council of State Garden Clubs, at year's end, has contributed a whopping $210,000 to preservation projects across the nation. Mrs. James C. Barrett, member and former district leader of the Garden Club of North Carolina, and her husband became the first land donors through the Trust under the National Council banner. Their gift was 17 panoramic acres atop Glassy Mountain, to be added to the Carl Sandburg Home National Historic Site in Flatrock, North Carolina. Also, the indefatigable Florida Federation of Garden Clubs, American Land Trust fund-raising award winners, co-sponsored the January dedication of the Tiger Creek Nature Preserve, at which Florida Governor Reubin O'D. Askew was a special guest.

Financial support of the Trust program remains unflagging. U.S. Steel gave its second $25,000, the Charles Engelhard Foundation donated its second $10,000, and ARCO Foundation, donor of $50,000 to Idaho's Silver Creek, has contributed another $2,500 for operations.

Also, three more corporate associates have come into the Conservancy's fold through Trust efforts—AMTROL, Inc.; Travelers Insurance Companies; and the New York Times Company.

The American Land Trust campaign is nearing its completion date of March 31, 1978. In the two years since its birth, the Trust has made great strides in gaining the direct support of American business for the Conservancy's land preservation programs. The Trust has also won 400,000 friends through National Council of State Garden Clubs. A full report on the impact of this bicentennial effort and the Conservancy's plans to carry on its momentum is forthcoming in the next *News*.

American Land Trust, P. O. Box 2076, Arlington, Virginia 22202. Executive Director: George S. Wills. Phone (703) 841-5376.

NEW PROJECTS

Colorado

NORTH STAR RANCH (Pitkin County). In cooperation with Pitkin County and the City of Aspen, the Conservancy purchased 174 acres of meadow land with stands of aspen and pine. The Roaring Fork River, an excellent freshwater fishery, crosses the property. Beavers, waterfowl, and shorebirds frequent the land's ponds and bog. The area will be managed by the city and the county and used for passive recreation, including hiking and cross-country skiing.

Illinois

CEDAR GLEN EAGLE ROOST—Addition—(Hancock County). Lying in the Mississippi River just off the Conservancy's 491-acre mainland preserve, Mud and Oliver's Islands provide significant day roosting sites for the endangered bald eagle. The islands, totaling 115 acres, consist of hardwood floodplain forest dominated by silver maple, cottonwood and black willow. Plans call for the area to be offered for dedication as an Illinois Nature Preserve and leased to Western Illinois University. The Illinois Chapter is fund-raising for the project.

Iowa

BEHRENS POND AND WOODLAND (Linn County). The 29-acre area is an area of beautiful wooded hills and natural ponds—a natural oasis in an area of extensive agricultural land. The preserve's small ponds provide habitat for the rare blue-spotted salamander and for two other amphibians rare in Iowa: the tiger salamander and the red-spotted newt. Fund-raising and management are being carried out by the Iowa Chapter.

Maryland

DEAL ISLAND WILDLIFE MANAGEMENT AREA (Somerset County). The 643-acre property consists primarily of productive tidal salt marsh fronting on Monie Bay and Little Monie Creek, a tidal stream. Osprey, bald eagles, and many waterfowl species frequent the marshland. Purchased in cooperation with the Maryland Department of Natural Resources, the area will be added to the state's existing Deal Island Wildlife Management Area.

Michigan

LITTLE MANISTEE RIVER (Manistee County). In an exchange/gift transaction with Packaging Corporation of America, the Conservancy acquired 2,200 acres of land along 8 miles of the Little Manistee River. The area, an American Land Trust project, is dominated by conifers, with old-growth oak and maple forest on the steep riverbanks. The

river, which flows through sandy soils and crosses extensive glacial outwash plains, empties into Manistee Lake, which in turn feeds into Lake Michigan. The area is under study for inclusion in a national recreational lands system. To acquire the land, the Conservancy purchased a 2,600-acre tract in Missaukee County, Michigan, and traded it on a dollar-for-dollar basis, with the excess Little Manistee valuation donated to the Conservancy by the company. The property will be conveyed to the U.S. Forest Service for inclusion in Manistee National Forest.

Minnesota

MINNESOTA PRAIRIE CHICKEN PRESERVE SYSTEM (Pankrantz Memorial Prairie)—Addition—(Polk County). Predominantly mesic prairie with low swales containing species characteristic of wet prairie, the 320-acre purchase expands the Pankrantz Prairie to 640 acres. Prairie chickens use the area for nesting cover, and a booming ground is located just to the west of the tract. Fund-raising is currently underway by the Minnesota Chapter.

Nevada

LAKE TAHOE BASIN MANAGEMENT UNIT (Douglas County). On behalf of the U.S. Forest Service, the Conservancy acquired 239 acres of meadow and woodland dominated by Jeffrey pine and lodgepole pine. The Forest Service will include the tract in its existing Lake Tahoe Basin Management Unit.

New York

HANNACROIX RAVINE—Addition—(Albany County). The 200-acre tract adjoins the Conservancy's existing preserve and brings the total acreage to 325. Purchased by the Eastern New York Chapter with funds donated by Dr. George Cooley, the property contains hardwood forest and 20-foot cliffs bordering Gulf Creek. The Eastern New York Chapter will manage the area.

Vermont

LAKE WILLOUGHBY (Orleans County). In cooperation with the Town of Westmore, the Conservancy purchased 12 acres fronting on Lake Willoughby. The property contains conifer forest and swamp woodland sloping gently toward a sandy beach and the lake. Plans call for the land to be conveyed to the Town of Westmore for use as a public recreation area.

SUGAR HOLLOW NATURAL AREA—Addition—(Rutland County). The listing for this project in the Fall 1977 *News* erroneously stated that a fund-raising campaign was underway to complete the project. In fact, funds for the purchase of the area were donated by Mr. and Mrs. E-An Zen. Any additional funds received for Sugar Hollow will be used for management of the preserve.

LIFE MEMBERSHIP FEE TO DOUBLE IN JULY

At its December meeting, The Nature Conservancy's Board of Governors voted to increase the contribution fee for life membership from $500 to $1,000. However, the new fee can be paid in two consecutive annual installments of $500, if so designated. The membership takes effect upon receipt of the second payment.

The new schedule does not go into effect until July 1, 1978; so for the next few months, life membership in the Conservancy, always a bargain, is even more so. If you have been considering becoming a life member, now is the time to act.

Life membership is a satisfying way to say you believe in the future of The Nature Conservancy and the natural world it works to safeguard.

RESERVE DATES NOW FOR 1978 ANNUAL MEETING

Plans are rapidly getting under way for the Conservancy's 1978 Annual Meeting to be held September 14-15 in the nation's capital. The Arlington Hyatt House, two blocks from the Conservancy's national office, and just across the Potomac from Washington, will serve as headquarters.

Registration will begin Thursday afternoon, September 14, followed by an opening reception and cocktail buffet. Friday's activities will include the annual business meeting as well as open Board of Governors and committee meetings. The Annual Awards Dinner will be held Friday night to announce the winners of the Oak Leaf and Stewardship Awards.

Saturday morning, buses will load for a post-meeting field trip to the Virginia Coast Reserve with other stops along the route. Participants will return to Washington Monday evening, September 18. Further details on reservations and registration will be published in the next *News*.

SPECIAL OUTINGS OFFERED TO CONSERVANCY MEMBERS

Virginia Coast Reserve

Miles of sandy beaches. Acres of green marshes teeming with life. Flocks of sea and shore birds. The timeless rolling tides. Stretching from the Virginia-Maryland border south along the Delmarva Peninsula to the Chesapeake Bay, the Conservancy's 35,000-acre Virginia Coast Reserve is one of the few segments of our coastline that looks much as it did 200 years ago. Biologists estimate that the marshlands linking the Conservancy's 13 islands to the mainland are among the richest and most productive in the world. Ninety percent of the commercial fish and shellfish caught in the area are dependent on the marshes. Among the islands' shorebirds, seabirds, and wintering waterfowl are loons, grebes, cormorants, snow geese, black ducks, egrets, herons, ibis, oystercatchers, sandpipers, gulls, and terns.

The Conservancy is offering its members a rare opportunity to cruise these pristine islands. We are hosting a trip to the Virginia Coast Reserve on the weekend of June 3 and 4, 1978. The outing will include a cruise of the islands with a Conservancy guide, overnight accommodations, meals, and round-trip bus transportation from Washington, D.C.

Arizona Preserves

South of Tucson in the midst of the vast Arizona-Sonora desert lie three of the Conservancy's most unusual preserves: Mile Hi Ranch/Ramsey Canyon, a deep, winding gorge in the Huachuca Mountain range; Patagonia-Sonoita Creek, a permanently flowing stream edged with cottonwood and willow; and Canelo Hills, a wet meadow of lush grasses dotted with trees and surrounded by desert. Totaling over 760 acres, the preserves are best known for their variety and abundance of birds, including many rare and peripheral species such as the sulfur-bellied flycatcher, olive warbler, painted redstart, rose-throated becard, and coppery-tailed trogon. Golden eagles can often be seen gliding majestically overhead. Mile Hi, known as "The Hummingbird Capital of the U.S.A.," is the only place in the country where 15 species of hummingbirds have been observed.

For the first time, the Conservancy is inviting its members to participate in a trip to the three Arizona preserves. The outing, scheduled for June 16-19, 1978, will include accommodations for three nights, meals, transportation from Tucson and between the three preserves, guides and guest lecturers.

Please make your reservations early, as we must limit each trip to a group of forty people.

For trip applications and additional details, please write to: Conservancy Field Trips, P.O. Box 3611, Washington, D.C. 20007; or call (202) 466-6307.

ECOLOGY FORUM (continued from page 25)

work with the Oregon Entomological Society, the Northwest Butterfly Survey, and professional entomologists to begin terrestrial arthropod survey work on several Northwest preserves including Cascade Head, Goose and Deadman Islands, Lawrence Memorial Grasslands, and Carlisle Bog. Substantial work on marine invertebrates has already been undertaken on several coastal preserves by university biologists.

One of the most exciting prospects for insect conservation research will come with the acquisition of Santa Cruz Island. Perhaps the most locally endemic species of butterfly in North America is the Avalon hairstreak (*Strymon avalona*), which is entirely restricted to Santa Catalina Island. It does not appear to be declining there. However, should the exceedingly widespread gray hairstreak (*Strymon melinus*) arrive on Santa Catalina, extinction of *avalona* could conceivably occur through genetic swamping or competition. It would be possible to conduct experiments in the compatability of these two butterflies on Santa Cruz Island, where *S. melinus* occurs commonly. Should they prove able to co-exist, we might consider introducing the Avalon hairstreak onto Santa Cruz Island in order to give it a much greater margin of protection for the future.

These West Coast cases of invertebrate conservation and research suggest that the Conservancy can pursue the huge task of protecting invertebrate life. Life is an iceberg, and the chunk below the surface has no backbone. We should begin thinking about that—and that means thinking small.

PHOTO CREDITS: Dave Bohn, pp. 4-5, 6, 14 left, 15; Eleanor Borden, p. 9 lower left, 11 Susan Bournique, inside front cover; Gerald George, p. 24; Ruth and Louis Kirk, pp. 18, 19; Tim Loomis, p. 9 right and top; Mike Lowell, pp. 20-21; Horst Mayer, pp. 13, 14 right; Anne Rudy, p. 22; U.S. Forest Service, p. 28.

NEW LIFE MEMBERS

Mr. R. B. Annis
Indiana

Mrs. Jessamine J. Arnold
Texas

Mr. David P. Becker
Maine

Mrs. Eleanor Garrell Berger
New York

Mr. Gad Bernstein
New York

Miss Lucy Blake
District of Columbia

Mr. Henry F. Boettcher
California

Mrs. Eve S. Bolze
Florida

Mrs. Poe Burling
District of Columbia

Mr. John R. Burns
Washington

Mrs. George G. Cameron
Michigan

Mrs. A. H. Cathcart
Minnesota

Mr. William J. Chandler
District of Columbia

Mr. Marvin M. Chesebro
California

Mrs. Mary Victoria Wesson Craw
Virginia

Mr. Gilbert M. Denman, Jr.
Texas

Mr. David D. Dominick
Colorado

Mr. Henry C. Duffield, Jr.
California

Ms. Jane Dunham
Illinois

Mr. Tyron Elliott
Georgia

Mrs. Doris F. Falk
California

Mr. James A. Fox
California

Dr. Frank M. Geiser
Connecticut

Mr. Carl L. Gibson
Tennessee

Ms. Thelma Hughes Gillam
South Carolina

Mr. Herbert R. Graser
Illinois

Mr. Richard W. Greenebaum
New York

Mrs. Charles C. Haffner III
Illinois

Mr. Wendell B. Hale
Connecticut

Mr. G. M. Hing
California

Mr. F. Kirk Hoover
Washington

Mrs. Arthur Horton
Indiana

Dr. Clara Johns
California

Mr. A. Stephen Johnson
Georgia

Mr. Willard S. Johnston
California

Mr. & Mrs. H. Stanley Krusen
Florida

Mrs. Winifred LaRose
New York

Mrs. Katharine D. Massel
District of Columbia

Mr. Marcelous Morris
Tennessee

Ms. Grace S. Nelson
California

Mrs. Phyllis Nimmons
Texas

Mr. Edward O'Neil
Pennsylvania

Mr. Frank H. Orbison
Wisconsin

Miss Estelle Parsons
New York

Mr. Ernie Probst
Indiana

Mr. Thomas W. Reese
North Carolina

Mr. Robert S. Rose
New York

Mr. Milton D. Rosenau, Jr.
California

Mr. Andrew C. Saltonstall
Virginia

Mrs. Arthur W. Sampson
California

Dr. Carey Stanton
California

Mr. David J. Swift
New York

Mrs. Christine Swigert
Oregon

Dr. Robert C. Tweit
Illinois

Mrs. Helen Von Ammon
California

Dr. Charles F. Walter
Wyoming

Mr. Charles Wheeler
Florida

Mrs. Philip Williams
Ohio

Mrs. Chester Winter
Colorado

Mr. & Mrs. John C. Wright
California

An individual becomes a Life Member of The Nature Conservancy upon contribution of $500 for membership dues.

NEW CORPORATE ASSOCIATES
(ANNUAL $1,000 MINIMUM)

Gardner Grant Company
New York

General Electric Company
Connecticut

Grace Foundation, Inc.
New York

Honeywell Incorporated
Minnesota

Inland Container Corporation
Indiana

New York Times Company Foundation
New York

Northrup Corporation
California

Palm Beach Post-Times
Florida

Rainier National Bank
Washington

U.S. National Bank of Oregon
Oregon

THE NATURE CONSERVANCY

NON-PROFIT ORG.
U.S. POSTAGE
PAID
PERMIT NO. 9388
WASHINGTON, D. C.

Eastern Regional Office
294 Washington Street, Room 850
Boston, Massachusetts 02108
(617) 542-1908
Bradford C. Northrup, Vice President

Southeast Regional Office
148 International Blvd., N.E.
Atlanta, Georgia 30303
(404) 659-0240
Riesley R. Jones, Vice President

Midwest Regional Office
328 East Hennepin Avenue
Minneapolis, Minnesota 55414
(612) 379-2134
John W. Humke, Vice President

Western Regional Office
425 Bush Street, 5th floor
San Francisco, California 94108
(415) 989-3056
Henry Little, Vice President

New York Development Office
36 West 44th Street, Room 307
New York, New York 10036
(212) 869-9532
William B. Carlin, Director

Mid-Atlantic Field Office
1800 North Kent Street
Arlington, Virginia 22209
(703) 841-5300
Steve Hamblin, Representative

Northwest Field Office
1234 N.W. 25th
Portland, Oregon 97210
(503) 228-9561
Spencer Beebe, Representative

California Field Office
425 Bush Street, 5th floor
San Francisco, California 94108
(415) 989-3056
Peter Seligmann, Representative

Colorado Field Office
820 Sixteenth Street, Suite 420
Denver, Colorado 80202
(303) 623-8088
Sydney Shafroth, Representative

Florida Field Office
10395 S.W. 132 St.
Miami, Florida 33176
(305) 238-0148
Dick Ludington, Representative

Hawaii Field Office
P.O. Drawer 4528
Honolulu, Hawaii 96813
(808) 531-0408
J. Hamilton Tabor, Representative

Indiana Field Office
Route 1, Box 155
Nashville, Indiana 47448
(812) 988-7547
Dennis Wolkoff, Representative

Michigan Field Office
Suite F, 531 N. Clippert Street
Lansing, Michigan 48912
(517) 332-1741
Michael L. Green, Representative

Minnesota Field Office
328 East Hennepin Avenue
Minneapolis, Minnesota 55414
(612) 379-2134
Geoffrey S. Barnard, Representative

Mississippi Field Office
P.O. Box 5556
Meridian, Mississippi 39301
(601) 693-2886
Rick Fortenberry, Representative

North Carolina Field Office
P.O. Box 805
Chapel Hill, North Carolina 27514
(919) 967-1406
Thomas Massengale, Representative

Ohio Field Office
1504 West 1st Avenue
Columbus, Ohio 43212
(614) 486-4194
Marshal A. Moser, Jr., Representative

Oregon Field Office
1234 N.W. 25th
Portland, Oregon 97210
(503) 228-9561
Ken Margolis, Representative

South Carolina Field Office
P.O. Box 5475
Columbia, South Carolina 29250
(803) 254-9049
La Bruce Alexander, Representative

Tennessee Field Office
720 West End Avenue, Suite 600
Nashville, Tennessee 37203
(615) 320-1465
Tim McCall, Representative

Connecticut Chapter
Science Tower, Box MMM
Wesleyan Station
Middletown, Connecticut 06457
(203) 344-0716
Evan Griswold, Director

Illinois Chapter
666 N. Lake Shore Drive
Suite 1919
Chicago, Illinois 60611
(312) 787-1791
Neil Gaston, Director

Maine Chapter
51 Chapel Street
Augusta, Maine 04330
(207) 622-3101
Charles Bradford, Director

Long Island Chapter
P.O. Box 72
Cold Spring Harbor, New York 11724
(516) 367-3225
Charles Bassett, Director

Eastern New York Chapter
P.O. Box 22
Altamont, New York 12009
(518) 861-6860
Kristine Kelly, Director

THE NATURE CONSERVANCY

Land conservation through private action.

National Office
1800 North Kent Street
Arlington, Virginia 22209
(703) 841-5300

102324R 1B 00 006 7807
MISS HAZEL A JOHNSON
770 WILLIAMS ST
NEW LONDON CT 06320